

REMARKS

This Amendment after Final Rejection is filed in response to the Final Office Action mailed May 17, 2006. All objections and rejections are respectfully traversed.

Claims 1-19 and 21-23 are currently pending in the case.

Claim 20 has been cancelled.

Claims 3 and 18 were amended to better claim the invention. As explained below, claim 3 was amended to remove a particular phrase, and claim 18 was amended to correct an antecedent basis issue. Due to the limit scope of these claim amendments, the Applicant respectfully urges that this Amendment after Final Rejection is still appropriate for consideration and entry, as it does not require significant new analysis or searching by the Examiner.

No new claims have been added.

Rejections Under 35 U.S.C. §112

At paragraph 2 of the Final Office Action, claim 22 was rejected under 35 U.S.C. §112, first paragraph as failing to comply with written description requirement. Specifically, the Examiner urges that the claim limitation “storing similar entries for the same queue at a first time and a second time...the second time is a higher priority than an entry at the first time” is not described in the specification. The Applicant respectfully urges that there is sufficient written description in the specification to make clear to one skilled in the art that the Applicant had possession of these aspects of the claims. Specifically, the Applicant directs the Examiner’s attention to page 13, line 28 to page 14, lines 2 of the Specification which describe (emphasis added):

The descriptors of a particular entry 530a may be substantially duplicated in the timing wheel, with the exception of different priority levels. For example, entries

532a and 534a represent the same queue entry having substantially the same descriptors with the exception of different priorities P-0 and P-1.

Referring to Fig. 5A, it is clear that similar entries for the same queue (in the example labeled queue Q_A) may be stored in association with a first and a second time (in the example, at the “Current Time Slot” and the “Now +5us” time slot). It is further clear that similar entries may have different priority levels, for example entry 532a has a priority level P-0 and entry 534b has a different priority level P-1. These priority levels are described at page 13, lines 27-28 of the Specification as related to, for example, “high/low” priority or alternately “CIR/EIR” priority. Accordingly, the Applicant respectfully urges that every aspect of claim 22 is supported by sufficient written description in the Specification.

At paragraphs 3-4 of the Final Office Action, claims 3-7 and 17- 20 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

Specifically, claim 3 was rejected in relation to the term “early forwarding”. While the Applicant still maintains that the meaning of the term is sufficiently clear, to advance the prosecution of the case, the term, “early forwarding” has been removed. Accordingly, the claim is believed to be in condition for allowance.

Also, claim 17 was rejected in relation to the phrase “if the queue is inactive for the CIR, activating the CIR and incrementing the aggregate CIR bandwidth for a media link. Specifically, the Examiner requests clarification “why it would be necessary to “increment the CIR bandwidth.”

The Applicant herein rephrases the past arguments in hopes of making them more clear and to address the Examiner’s new comments. The Applicant describes that the CIR bandwidth is incremented in the Specification at page 15, lines 13-18, stating:

Otherwise, the process proceeds to Step 606 where it is determined whether the queue is inactive for its CIR rate component. If so, the CIR rate is activated by, e.g., asserting an associated active bit, and the aggreg-

gate CIR bandwidth for the link is incremented by the queue's CIR configuration (Step 608). If the CIR component is not inactive, then the EIR rate is activated by, e.g., asserting its active bit, and the aggregate EIR bandwidth for the link is incremented by the queue's EIR configuration (Step 610).

The Applicant describes that some embodiments not only use the committed information bit rate (CIR) to transmit packets but also keep track of the amount of CIR bandwidth used. Accordingly, a value indicating aggregate CIR bandwidth used for the link is incremented when a queue uses the CIR. As described in the Specification, the incremented aggregate CIR bandwidth value may be, for example, later used in a calculation of a scale factor. Specifically, at page 15, lines 21-24 the Applicant states that in one embodiment:

$$\text{scale} = (\text{aggregate link EIR}) / (\text{total link BW} - \text{aggregate link CIR})$$

The scale factor is used to proportionally scale the actual bandwidth used by the EIR components of all queues sharing the link so that the sum of all EIR bandwidths is equal to the available bandwidth of the link.

Thus, for the above reasons the Applicant respectfully urges that claim 17 is definite and in condition for allowance.

Claim 20 was rejected based upon a variety of grounds. The Applicant has cancelled claim 20 and accordingly believes this rejection to now moot.

The Applicant respectfully notes that claims 4-6, 18 and 19 are rejected as depending from rejected base claims and do not include themselves rejected material. Since the above discussed base claims are believed to be in condition for allowance, claims 4-6, 18 and 19 are also believed to be in condition for allowance.

Rejections Under 35 U.S.C. §102

At paragraphs 5-6 of the Final Office Action, claims 1-4, 6-15, 17-21 and 23 were rejected under 35 U.S.C. §102(e) as being anticipated by Fan et al., U.S. Patent No. 6,408,005, issued on June 18, 2002, hereinafter (“Fan”).

The Applicant’s claim 1, representative in part of the other rejected claims states:

1. A method for integrating traffic shaping and link sharing functions to enable scaling of a plurality of queues multiplexed to media links of an intermediate station in a computer network, the queues storing data packets that are destined for the media links, the method comprising the steps of:

assigning committed information bit rate (CIR) and excess information bit rate (EIR) bandwidth values per queue, along with a shaped maximum bit rate per media link;

uniformly scaling the EIR bandwidths of all queues sharing a media link so that the sum of all scaled EIR bandwidths equals an available bandwidth of the shaped media link;

calculating when a queue is next eligible for servicing; and

storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing.

Fan discloses a dynamic rate control (DRC) scheduler for scheduling cells. The scheduler constructs a rate for a stream from a minimum guaranteed rate and a portion of excess bandwidth that is made available to the stream. *See* col. 5, lines 42-45 and col. 6 lines 60-65. The distribution of excess bandwidth is determined by weights assigned to the streams. *See* col. 8, lines 17-18. Additionally, Fan describes using a time wheel data structure. *See* col. 18, lines 29-39. “As shown in Fig 8, each bin in the time wheel points to a[sic] four linked lists (one for each priority level) of VC identifiers whose timestamps correspond to the bin label.” *See* col. 18, lines 29-33. Virtual Channels (VCs) are served from a list constructed from the bins in round robin fashion. *See* col. 18, lines 34-33.

The Applicant respectfully urges that Fan does not show Applicant's novel *"storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing."*

First, while the Applicant's claimed timing wheel has entries that identify *a queue, a media link, and a priority*, Fan describes a timing wheel that simply points to bins of Virtual Channel (VC) identifiers. Virtual channel identifiers are well known in the art as numerical tags, often of 16-bits, which specify a particular virtual channel on which data is transmitted. Bins of these numerical tags (i.e. the VC identifiers) may not specify all three claimed qualities. Indeed, even if the Examiner interprets Fan's bins of VC identifiers as indicating a media link and a priority, which the Applicant traverses, there is no indication they could also indicate *a queue*, a different third quantity.

Second, the Applicant claims that *hash entries* are used to identify these quantities. On page 13 of the Office Action, the Examiner likens Fan's VC identifiers with Applicant's hash entries, commenting that the comparison is appropriate "since they [hash entries] act merely as identifiers." The Applicant respectfully urges that hash entries and VC identifiers are quite different and may not properly be equated. As discussed above VC identifiers are well known numerical tags that are used to specify a destination for data. There is no suggestion in Fan that VC identifier are used in relation to or otherwise associated with a hash operation. Accordingly, absent suggestion of a hash operation, VC identifiers should not be interpreted as *hash entries*.

As such, the Applicant respectfully urges that Fan is legally precluded from anticipating the claims under 35 U.S.C. § 102, because of the absence from Fan of the Applicant's novel *"storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing."*

Rejections Under 35 U.S.C. § 103

At paragraph 8 of the Office Action, claims 5 and 22 were rejected under 35 U.S.C. §103 as being unpatentable over Fan.

At paragraph 9 of the Office Action, claim 16 was rejected under 35 U.S.C. § 103 as being unpatentable over Fan, in view of Gemar et al., US Patent No. 6,483,839, hereinafter Gemar.

The Applicant respectfully notes that claims 5, 16, and 22 are dependent claims that depend from independent claims that are believed to be in condition for allowance. Accordingly claims 5, 16 and 22 are believed to be in condition for allowance.

Thus, all independent claims are believed to be in condition for allowance.


All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Should the Examiner feel personal contact is desirable to advance the prosecution of this case, the Examiner is encouraged to contact the undersigned attorney at (617) 951-2500.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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